

## MIDALLOY ER209 (NITRONIC® 50W) Bare Wire

### SPECIFICATION

- AWS 5.9 Class ER209 / ASME SFA 5.9 Class ER209

### CLASSIFICATION

- ER209
- UNS S20980

### DESCRIPTION / APPLICATION

- MIDALLOY ER209 is most often used to weld UNS S20400 (Nitronic 30), UNS S20910, and Armco Nitronic®50 base metals.
- This filler metal can also be used in welding dissimilar alloys like mild steel and the stainless steels, and also for direct overlay on mild steel for corrosion applications when used with the gas metal arc welding process.
- The gas tungsten arc, plasma arc, and electron beam processes are not suggested for direct application of this filler metal on mild steel.
- MIDALLOY ER209 is a nitrogen strengthened, austenitic stainless steel exhibiting high strength and good toughness over a wide range of temperatures.
- Weldments in the as-welded condition made by using this filler metal are not subject to carbide precipitation.
- Nitrogen alloying reduces the tendency for carbon diffusion and thereby increases resistance to intergranular corrosion.

### TYPICAL CHEMISTRY

C	Cr	Ni	Mo	Mn	Si	P	S	N	Cu	V
0.05	20.5-24.0	9.5 – 12.0	1.5 – 3.0	4.0 - 7.0	0.90	0.03	0.03	0.10-0.30	0.75	0.10- 0.30

### TYPICAL MECHANICAL PROPERTIES

TENSILE STRENGTH - 690 MPA	101,500 PSI
YIELD STRENGTH	62,900 PSI
ELONGATION MIN.	36%
TYPICAL CHARPY IMPACTS	54.2 ft. lbs. @ -20°C

### STANDARD PACKAGING

- TIG 10 lb. tube / 60 lb. carton
- MIG 30 lb. spool

® Registered trade name of Armco Steel

2/25/15

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Office and Corporate Warehouse  
 630 Axminister Drive  
 St. Louis, MO 63026 • 636-349-6000 • 800-776-3300  
 Fax 636-349-2240



**TYPICAL WELDING PARAMETERS FOR MIDALLOY ER209 (NITRONIC® 50W) WIRE**

**GMAW (SHORT CIRCUITING MODE)**

WIRE DIA.	AMPERAGE	VOLTAGE	WIRE SPEED IN./MIN.	JOINT THICKNESS IN.	SHIELDING GAS
.030"	70-90	18-24	150-200	.050-3/16	90He/7.5Ar/2.5Co2
.035"	70-90	17-20	150-200	.050-3/16	90He/7.5Ar/2.5Co2
			150-200	.050-3/16	69Ar/30He/1Co2
.045"	75-160	19-22	175-225	1/8-3/4	75Ar/25He OR
	75-160	19-22	175-225	1/8-3/4	90He/7.5Ar/2.5Co2
	75-160	18-22	175-225	1/8-3/4	69Ar/30He/1Co2

**GMAW (SPRAY TRANSFER MODE)**

.035"	145-200	25-29	225-350	1/16 TO 1/4	92%Ar 8%CO2or O2
.045"	190-250	24-30	200-350	1/4 and UP	98%Ar -2%CO2or O2
.062"	220-300	26-32	210-330	3/8 and UP	98%AR-2%O2

**GMAW (PULSED CURRENT MODE)**

.035" peak	120-150 250-300	18-20	175-225	1/8-3/4	75Ar/25He, Argon or 69Ar/30He/1Co2
.045" peak	120-150 250-300	18-20	175-225	1/8-3/4	75Ar/25He, Ar or 69Ar/30He/1Co2

ALL PARAMETERS DIRECT CURRENT REVERSED POLARITY

GTAW Parameters same as 300 series stainless steels

**NOTES:**

The weld deposit has no ferrite or no little ferrite. Care must be taken to avoid hot cracks. This is accomplished by low heat input and making "convex" bead profiles. Excessive weaving may also cause surface (hot short) cracks.

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